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ON THE GASTRIC DISORDERS OF PULMONARY TUBERCULOSIS.

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A CLINICAL LECTURE, DELIVERED AT THE PHILADELPHIA HOSPITAL.

IN the phantom chase after specifics for the cure of pulmonary tuberculosis, thus far in the history of the medical art, only one or at least two substantial realities have become the common property of the medical profession. It matters not what methods have been used, or what roads have been taken, the same goal is reached. The necessity of the climatic treatment for properly selected cases of phthisis is accepted without further argument. So, too, the conviction is now firmly established in the minds of all clear-thinking practitioners that on the nutrition of the patient depends largely the success which we meet in combating the disease. Just so far as we are able to keep this up, just so far as we can keep up the weight and good strength, just so far as we meet wear and waste with nutriment, just so far do we control this disease. While the climatic treatment is essential in many cases, proper feeding is necessary in all cases. Indeed, without the latter, the former avails little. Of course there are cases and cases of tuberculosis, and far too many, in spite of the use of our best measures and resources, prove fatal. The occurrence of such an unfortunate result depends upon the number of infective micro-organisms, invading the system, upon the particular organ or tissue invaded or upon the degree of resistance of the tissues to the irritation of the specific bacillus. Cases, however, the fatal termination of which is a foregone conclusion, demand careful and patient attention to nutrition and to those processes which contribute to nutrition, the function of digestion, in order to allay distressing symptoms, and by this means contribute to the comfort of the patient and soothe the weary pathway to the grave.

By necessity, therefore, it behooves the practitioner to guard with jealous care the functional powers of the stomach and by judicious diet, but especially by considerate medication, to prevent the development of any organic disease of that organ. It is to enforce some of the truths hinted at that I beg to occupy the hour with a study of a few cases that illustrate some relations of gastric disorders to pulmonary phthisis. For convenience of presentation I will arbitrarily present these relations under four headings:

(1) Disorders that precede or are coincident with the development of tuberculosis.

(2) Disorders which attend the early stages of, and often mask the true lesion.

(3) Disorders that occur during the course of, and complicate the lung affections.

(4) Disorders which are due to the tuberculous process.

The subject is not a new one. In former times it was held that certain gastric disorders were essential factors in the development of some cases of phthisis, notably round ulcer of the stomach, and functional weakness of the organ. Both were more than significant if they occurred in early life. The latter was characterized by loss or perversion of the appetite, disgust for food, and particularly for special foods, as fats, with more or less indigestion, and associated with functional weakness of other organs, and with anæmia, emaciation and prostration.

In accordance with our view of tuberculosis of the present day, these gastric disorders do not predispose to tuberculosis, but rather cause such weakness of the tissues whereby their resisting power is lessened, and hence the individual may become more susceptible to the action of the bacillus tuberculosis. You will meet, as you go along in your career, with numbers of cases which will present such phenomena as I have indicated, and over and over again your attention will be called by anxious friends, on account of the grave condition of the patient, to the liability to or, in popular estimation, threatenings of tuberculosis. A presentation of such cases would simply mean a study of gastric disorders in which tuberculosis might subsequently arise. Bearing in mind this relationship, not causal but coincident, I will hasten to a study of cases illustrating the other groups.

The first patient that I present to you illustrates in the early period of the disease the insidious development of tuberculosis and the great care that must be exercised in its detection.

The patient is 20 years of age, and had been employed in a mill since she was 15. One year before admission she seemed to fail in general health. A few weeks' rest every month or two would be sufficient for her to regain the lost ground, only apparently to fall back in a short time. After a period of rest, she seemed perfectly well and returned in good health and spirits to her work. One month after this she began to experience morning nausea, soon vomiting ensued, and this occurred particularly in the morning. It persisted in spite of treatment and was apparently without cause. Her general health soon suffered, her menses ceased, and she began to lose flesh. The loss of flesh was thought to be due to the gastric disturbance. After two months of persistent disorder of the stomach the occurrence of slight flush in the evenings suggested the possibility of fever, and careful observations with the thermometer showed a marked rise in temperature. Again the patient was gone over, in order to explain the fever, when quite considerable disease of the apex of the right lung was discovered. Soon after this she came under our care, the admission to the hospital being due to the occurrence of pulmonary hemorrhages. On examination, the emaciated and anæmic girl was found to have phthisis, with lesions at the apex of the right lung, indicative of the second stage.

There is no doubt, in reviewing the case, that the early vomiting, apparently causeless, was of the nature of a reflex vomiting, due to the tubercular infiltration of the right apex. This accords with the testimony of clinicians generally, for writers have over and over again called attention to the danger of overlooking pulmonary tuberculosis, because of the marked gastric symptoms that attend it.

In this instance the early vomiting was due to irritation of the pulmonary branches of the vagus, reflexly exciting the vomiting centre in the medulla. Vomiting, remember, may be, and is usually, due in the later stages to the cough. Further than this, and to impress upon you the danger of overlooking incipient phthisis because of the prominence of gastric symptoms, the case gives us no other lesson.

The three cases which you now see before you are instructive examples of gastric disorders that arise in the course of tuberculosis. They illustrate how seriously the tubercular process may be influenced by such complications, or how much discomfort may be added to the distressing pulmonary symptoms.

It is not to be forgotten that in the long course of chronic phthisis gastric affections may arise just as likely from causes which are operative in health. When a patient has phthisis, indeed, he is more liable to disorders of the stomach, because more susceptible to the effect of deleterious influences. This patient is now suffering from a grave disorder of the stomach which has arisen long after the lung disease. He is 40 years of age and has had pulmonary symptoms, indicating the presence of tuberculosis for ten months. On examination, when admitted to the hospital, it was found that he had consolidation of the apex of the right lung. It was not on account of lung symptoms that he applied for treatment, but on account of subacute gastritis. During the latter part of September he had been drinking considerably. The local action of the alcohol produced the frequent effect, a subacute inflammation, whereby morning vomiting was induced. This vomiting became more continuous during the past week and caused great prostration. On the day of admission it was constant, resulting in the discharge of ropy mucus, sometimes tinged with blood. Nothing could be retained by the stomach. There were marked epigastric pain and tenderness.

I intimated that the patient was prostrated, and he stated that he had lost rapidly in flesh during the past two weeks and that he had had some fever. We found this fever to be marked, reaching 103° in the evening, falling to 100° or 101° in the morning. With the increased fever there were increased pulse rate and increased respiration. The usual pulmonary symptoms were present. The cough was particularly harassing and violently spasmodic, appearing to be of laryngeal origin and associated with some hoarseness. The gastric disturbance, the high fever and the severe cough were the most prominent symptoms. The physical signs did not indicate very active disease, and the fever was apparently due to the gastric disorder. The therapeutic indication was to relieve the gastritis. In fact, attention only could be paid to it. Mild external counter-irritants were used, and small doses of calomel and bismuth, frequently repeated, were given internally. Cracked ice was allowed, and whey or diluted milk, with lime-water, given for nourishment. Careful management in this way had to be continued for a week before the gastric symptoms were controlled. It was most interesting to observe, however, that as they came under control the lung symptoms also abated, and, particularly, the fever gradually subsided. As soon as the patient began to take nourishment the fever lessened day by day. The patient has now been in the hospital four weeks,

and, as this chart indicates, the temperature has been normal for two weeks. His strength has returned, and he is again gaining weight, as indicated by the weight record. More instructive yet is the study of the physical signs. For three weeks the local process seemed to be quite active, as indicated by the presence of a large number of moist râles, and by the occurrence of abundant mucopurulent expectoration. The past week the râles have diminished very much and the expectoration has been reduced one-half. In the meantime no remedies whatsoever have been addressed to the lungs.[1]

One can readily see in a case, the gastric symptoms of which were not so striking and yet possibly just as pronounced in their deleterious effects on the system, how the evil train of symptoms might have been attributed to the lung trouble. How readily, too, could one have been led to the formation of a serious prognosis. We learn from the case not only the value of treatment, independent of the pulmonary process, but the grave importance of recognizing and weighing properly all possible complications before we venture upon a prognosis. I am much impressed by this view. I trust, therefore, that the picture presented by this case will be so impressed upon you as to always make you mindful of the very grave effects of any gastric disorder in the course of tuberculosis. The patient would have lost his life by any reckless disregard. Certainly he now experiences a new lease.[2]

The next patient, as you will see, is very anæmic and considerably emaciated. The early history of chronic tuberculosis of the lung is learned, and we find that he suffers from some lung symptoms. Night cough and shortness of breath are particularly distressing, but he complains less of these pulmonary symptoms than of the symptoms due to stomach disorder. His appetite is poor, his tongue is pale, flabby and furred, and he complains of great heaviness after eating, of some flatulence and of acid eructations. Food does not excite vomiting, but very quickly causes severe heartburn. The heartburn is characteristic, it continues for a long while after eating, is associated with the eructation of acid fluid. The digestion is prolonged and laborious. Indeed it seems, he says, as if a portion of one meal was not digested before the time came to take another. These symptoms are quite common in phthisical cases, but in addition there is another that is rather unusual. Every day, or, at the longest, once in thirty-six hours, the patient has had an attack of vomiting. The contents of the stomach are ejected and represent the remains of two or three meals in a partial state of digestion, associated with some mucus and considerable fluid.

The microscopic examination of the matter ejected showed the presence of

[1] The patient, Joseph Parker, remained in the hospital until March. He gained in weight and strength; he was without fever during the entire time, and his lung symptoms disappeared, while the physical signs indicated only slight advance of the process.

[2] In January of the present year the author was called to see a young lady, aged 22, with bilateral phthisis with excavations. She was taking creosote every three hours, antifebrin p. r. n., when temperature was above 102°, usually twice a day. Lactopeptine and syrup of the hypophosphites immediately after meals. Cod-liver oil and whiskey two hours after meals. Nitric acid and nux vomica before meals. A solution of apomorphia for cough. Inhalations twice daily. Every three or four hours a lozenge of codeia. An antiseptic solution to the nostrils. Liniments were applied to the chest. Soda mint was used *ad lib.* Strange to say, suppositories were not used; but in twenty-four hours at least eighteen doses of drugs passed the cardiac end of her stomach. Countless sprays, ointments, etc., were detained higher up. The patient improved on whiskey and food alone.

the torula, or yeast plant, and of bacteria indicating a high degree of fermentation. On physical examination of the stomach, it is readily found that the organ is dilated. It is not necessary to detect this by distending the stomach with artificial means. The enormous area of tympany which you observe to be present so clearly defined, is due alone to distention of the stomach. There is no doubt that this extreme distention of the stomach and high degree of flatulence that are present very seriously increase the pulmonary complaint on which the patient lays much stress, that is, the shortness of breath. It is scarcely worth while to enter into a dissertation on the causes of dilatation of the stomach. I have intimated that it is simply a part of the general atrophying process and debility that attend tuberculosis. Of course, in such cases a moderate amount of gastritis arises primarily. The digestion is slow, and the products of digestion are retained in the stomach longer than normal, with increased amount of gas from fermentation. The internal pressure thus created, and which would be overcome in health, leads to overdistention, and muscular fibres waste or atrophy under these influences.

That this has arisen in the course of, and secondary to, the tubercular process, the testimony of the patient well proves. It is certain that prior to a short time ago his digestion was good, certainly his appetite was excellent.

The prevention of secondary affections of the stomach, like those in the course of phthisis, is only hinted at when speaking of the first case. Of course, all liability to gastric catarrh must be removed, and the general nutrition of the patient kept up as much as possible. Time forbids a full discussion of measures essential to secure these ends. The relief secured for this patient was simple. First, the medicines for cough were stopped, cod-liver oil and hypophosphites were taken away. The stomach was washed out daily with warm boric acid solution, and small doses of bismuth given every three hours. Of course, a selected diet was ordered.[1]

That graver organic affections of the stomach may complicate the course of pulmonary phthisis is worthy of mention. It is not often that we find tubercular ulceration of the stomach; indeed, it is quite rare, and yet a possibility sufficient to make a study of its clinical phenomena quite important, as well as to impress upon us the liability of its occurrence in the course of this disease. I have had the opportunity, in looking up the literature of this subject, to study the cases that have been recorded; only some forty cases are specifically mentioned. Its rarity, therefore, is without question. Pathologists of very large experience, who have seen thousands of autopsies, have met with but one or two cases. Thus far it has also been uncommon in the experience of clinicians; at least its recognition by clinicians prior to death has been exceedingly rare. While it has been suspected in some of the cases which I have studied, in only one case had the diagnosis been made some months prior to death. It was a case of Gerhardt's, and the diagnosis was made because of symptoms similar to the symptoms of simple round ulcer of the stomach. In order that you may be led to suspect the presence of the affection, even if you cannot positively

[1] In two-weeks' time the gastric symptoms subsided, and, although in advanced phthisis, the patient lived comfortably, so far as gastric symptoms were concerned, more than six months.

assert it, some of the data collected from the source which I have mentioned will be given you. It is just as well that we are placed in such a position that we can judge of its possible presence in the course of any given disease which we may have. Until I had made a study of these cases I was unaware of some facts which certainly are of interest; and first, a further word regarding its rarity. You well know that tubercular disease of the intestines is most common, and it has long interested pathologists and clinicians to know why such an affection did not arise in the stomach as well. It now is very well proved that unless adhesions had formed, fixing the stomach, the localization of the disease in the stomach only rarely takes place. First, the acid contents of the stomach are destructive to the bacilli of tuberculosis if they remain long in that viscus. Second, the contents are hurried along so rapidly that lodgment does not take place as readily as in the bowel. Third, the anatomical structure of the stomach prevents tubercular infection. It is notable that lymphatic tissue and lymph space and lymph structures are not as abundant in this viscus as in the bowel. For these reasons, therefore, the rarity of tuberculous ulceration of the stomach has been explained.

Primary tubercular ulceration was not found to take place in any of the recorded cases. The ulceration developed in the later stages of pulmonary phthisis or subsequent to the commencement of tuberculosis of a more general character. The symptoms, therefore, arise in the course of tuberculosis of other organs. In addition to the rarity, it was quite of interest to find that many cases have occurred in children. Simple round ulcer of the stomach, you know, is very infrequent in children; while, compared with adults, tubercular ulceration of the stomach is quite common. One-third of the cases were those of children under fifteen years of age. The symptoms of this complication, as you may have judged from the above, are not present to a marked degree. Indeed, often no sign or symptoms were present during life. On the other hand, suddenly attention may be called to the stomach by the occurrence of one of two very grave symptoms—I mean either gastric hemorrhage or perforation of the stomach. In quite a large number of cases, without any previous intimation of disease of the stomach, a patient has been suddenly seized with hemorrhage, which, in all the cases, resulted fatally. It is particularly striking to note this characteristic quite often in children, and the importance of it you will appreciate when called upon to see a case of hæmatemesis, the cause of which is doubtful. You would naturally, the case being one of pulmonary tuberculosis, think that you had simply to do with a case of pulmonary hemorrhage, and so we have learned from the study of the cases that gastric hemorrhage may be confused with pulmonary hemorrhage. Indeed, from my own experience of tuberculosis in children, I am led to think that, given a hemorrhage of doubtful origin, with discharge of blood by the mouth, it is more likely to be due to a lesion in the stomach than one of the lungs.

Sudden severe pain in the epigastrium, with the rapid development of collapse, indicates the occurrence of perforation. I can well appreciate the nonrecognition of tubercular ulceration and perforation, unless the possibility of its occurrence was known or borne in mind. That it does occur the records of five

or six cases clearly show. In some of these cases the nature of the epigastric pain was not surmised, and hence it is important to remember that if in the course of pulmonary or general tuberculosis, it arises with grave symptoms, like those of perforation, ulceration of the stomach is to be suspected.

It occurs quite frequently that either of these two symptoms is the only manifestation of a gastric lesion. In the ordinary course of tuberculosis, their sudden occurrence would be a surprise. In some of the cases epigastric pain was present for a time prior to death. It was not associated with other symptoms in many of the cases, and did not lead to the suspicion of ulceration. The same may be said of epigastric tenderness as well as of other symptoms that are well known to arise in ulcer of the stomach.

As before intimated, the group of symptoms which indicate the presence of ulceration occur only very rarely in cases with sufficient clearness to cause a diagnosis to be made prior to death. It is more particularly, therefore, that mention is made of this lesion of the stomach to caution you and to teach you to be on your guard, in cases of tuberculosis. Of course, the occurrence of such ulceration, if recognized, would add more gravity to the prognosis of the case. Certainly, almost all proper attempts to eradicate the disease are futile when such a lesion exists.

Tubercular ulceration of the stomach is not primary, but follows tubercular disease of other organs, and is most liable to occur with general tuberculosis. The duration of a case of tuberculosis does not seem to favor so much its development as an intense general infection of the body.[1]

It is of importance, therefore, gentlemen, to bear in mind the possible occurrence of a gastric lesion when one treats any organic lung affection. Care, too, must be taken not to unduly treat the stomach by our modern methods, for fear of an accident from the suspected lesion.

[1] The author's case of tuberculous ulcer of the stomach was reported in Phil. Hosp. Rep., Vol. I., 1890. Negro, aged 40. Phthisis and secondary general infection. Large ulcers found in stomach. No symptoms during life. Patient was filthy in his habits, and always swallowed his expectoration.